

CLAIMS

What is claimed is:

1. A semiconductor structure, comprising:

a substrate;

a first layer formed above the substrate; and

a textured nitride layer formed on the first layer.

2. The structure of claim 1, further comprising at least one of: a dielectric layer and a metal layer formed above the textured nitride layer.

3. The structure of claim 1, further comprising a buffer layer formed between the substrate and the first layer.

4. The structure of claim 3, further comprising at least one of: a GaN layer and an AlInGaN layer formed between the buffer layer and the first layer.

5. The structure of claim 1, further comprising a light emitting structure formed between the substrate and the first layer.

6. The structure of claim 1, wherein the structure is used as a semiconductor device comprising at least one of: a field effect transistor, a light emitting diode, and a laser.

7. The structure of claim 1, wherein the first layer comprises a crystalline nitride layer.

8. The structure of claim 1, wherein the textured nitride layer partially covers the first layer layer.
9. The structure of claim 8, wherein the textured nitride layer forms at least one of: a stripe pattern and a circle pattern.
10. The structure of claim 7, wherein the first layer and the textured nitride layer comprise a gate barrier structure.
11. The structure of claim 10, further comprising at least one contact formed on the gate barrier structure.

12. A field effect transistor comprising:

a substrate;

an active layer formed above the substrate;

a crystalline nitride layer formed above the active layer; and

a textured nitride layer formed on the crystalline nitride layer.

13. The field effect transistor of claim 12, wherein the crystalline nitride layer and the textured nitride layer comprise a gate barrier structure.

14. The field effect transistor of claim 13, further comprising at least one of: a source contact, a drain contact, and a gate contact formed above the textured nitride layer.

15. The field effect transistor of claim 12, further comprising at least one of: a source contact, a drain contact, and a gate contact formed beside the textured nitride layer.

16. The field effect transistor of claim 12, wherein the nitride layer forms a layered recessed gate structure for at least one of: a source contact, a drain contact, and a gate contact.

17. The field effect transistor of claim 12, further comprising a passivating layer formed above the textured nitride layer.

18. A light emitting device, comprising:

a substrate;

an n-type layer formed above the substrate;

a light emitting structure formed above the n-type layer;

a p-type crystalline nitride layer formed above the light emitting structure; and

a textured nitride layer formed on the crystalline nitride layer.

19. The device of claim 18, further comprising a p-type contact formed above the textured nitride layer.

20. The device of claim 18, wherein the device comprises at least one of: a light emitting diode and a laser.